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Survey of Oral Hygiene Behaviors, Knowledge and Attitude among School Children: A Cross-Sectional Study from Iran

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Abstract

Background: Oral health is not only important for appearance and sense of well-being but also for overall health. The study is aimed to evaluate oral hygiene practice, knowledge and attitude among (10-15 yr) school children. **Methods:** This is a cross sectional study was conducted on 440 school students of age group (10-15 years) from five different schools of khorammabad at 2013. The school and the students were selected by random sampling method. A pre-tested close- ended questionnaire was used for the study, The data was analyzed with SPSS version 16.0 and using the Student's T-test, ANOVA and Karl Pearson's correlation
Results: 83% reported that use of fluoride strengthens teeth and only 18.2% knew that healthy teeth are strong and caries free teeth. Only 5% participant reported the reason for dental visit was general dental check up while 75% visited dentist only when dental pain. 8.2% had the habit of rinsing their mouth after eating. A linear positive correlation was found between knowledge, attitude and behavior. **Conclusion**: Oral hygiene habits, oral health awareness and knowledge level among school children is not satisfactory. The participants had poor oral health behavior, insufficient knowledge, incorrect attitude and practice regarding oral health.

Keywords: Dental Knowledge; Health Practice, oral hygiene, Health, Behavior, Health Belief Model

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Introduction

Oral health is important for appearance, sense of well-being and also for overall health and oral health can affect quality of life directly(1), and has been linked to sleeping problems, as well as behavioral and developmental problems in children(2). Oral health may be defined as a standard of health of the oral and related tissues which enables an individual to eat, speak and socialize without active disease, discomfort or embarrassment and which contributes to general well being(3). Good oral health practices are necessary from a young age to ensure positive long term dental health and hygiene (4) and the oral health of children is important towards their overall well being(5). "Oral health is an integral part of general health; therefore, its disregarding will give rise the negative health and social consequences" (6, 7) oral health status is often determined by the amount deposited on the surfaces of teeth(8) and poor oral hygiene introduced as a predisposing factor to periodontal diseases and associated with cardiovascular diseases and even pre-term low-birth weight infants(6) in contrast, healthy oral behaviors reduce the amount of deposits particularly plaque on the surfaces of teeth(7). With developing country like Iran, Dental hygiene is poor with inadequate and improper brushing of teeth, no washing of mouth after intake of sweets, wide-spread substance abuse and addiction, hyper-acidity, increased consumption of refined sugar and sweetened foods. Use of toothbrush in underdeveloped areas is grossly limited and toothpick is traditionally utilized for dental cleaning. Regular brushing of teeth after principal meals is not practiced universally(9). Yazdani et al (2009) showed that all of 417 students had dental plaque, and 93% had gingival bleeding on at least one index tooth(10) Over the past two decades, increasing levels of tooth decay in children and adolescents has been observed in developing countries compared with developed countries(11)

Little is known about oral health attitudes and behaviors of children from developing countries as comparison with developed countries(12, 13), although such studies showed that the educational intervention based on KAP (knowledge–attitude–practice) model significantly improved oral health practice(11, 14, 15) and a positive association between low knowledge and presence of dental caries was seen(11) and in other study results showed that children with low oral health knowledge are twice more likely to have caries(16) But, another study showed that the practice of oral health cannot be predicted simply by knowledge, attitude and based on the KAP model and should consider other factors too(11).

Therefore oral health is a common concern in developing countries and the necessity of interventions to improve oral health knowledge and preventive practices are reported by several studies(16, 17). So we used Health Belief Model as a theoretical framework to assessing of the participants attitudes. This model suggests that whether or not individuals take action to protect their health depends on whether they believe that they are susceptible to an ill health condition; that the occurrence of that condition would have serious consequences; and that they have a course of action to avoid the condition and benefits of taking the action outweigh the costs(18). Perceived severity, susceptibility, and benefits are three concepts from the HBM which were utilized in this study. In our research area (west of Iran), no investigation has been carried out on the oral health behavior, knowledge and attitude of school children so, regarding the importance of oral health and related knowledge, attitude and behavior status among school children who they are in growing age and good oral health can help to have better life and high quality of life, this study aimed to evaluate oral hygiene practice, knowledge and attitude among (10-15 yr) school children..

Methods

This study was a cross-sectional survey which included 440 school students of age group (10-15 years) from five different schools of Khoramabad, Iran at 2013. The school and the students were selected by random sampling method. The consent for the participation of school children were obtained from the head of the school verbally and an *informed consent form* signed by the *parents* of children. All subjects were selected According to the following criteria: age between 10-15 years, so that they can easily understand and answer the questionnaire. The purpose of the survey was informed and explained to the participants and those who voluntarily agreed to participate in the survey were asked to fill the questionnaire.

Subjects were recruited from their class. The data were gathered by researcher based questionnaire. Content validity of questionnaire (addresses the adequacy and representativeness of the items to the domain of testing purposes and refers to the degree to which the content of the items reflects the content domain of interest) approved in the Expert panel (The expert panel comprised six health promotion faculty members and two dentists who invited to participate with information about the study via e-mail. To assessing of the content validity index (CVI), experts in the field are asked to assess the relevance of each item on a 4-point scale.

The content validity index (CVI) for each item is established by calculating the proportion of experts who judge it to be quite relevant or highly relevant, corresponding to a response of either 3 or 4. A minimum item CVI is 0.80(8) and a pilot survey was conducted to assess the appropriateness of the questionnaire and internal consistency reliability for knowledge section was α=0.85 and for attitude totally was α=0.8

The questionnaire was consisted from three sections which included 1- Twenty questions for assessing of participants' knowledge on the number of deciduous and permanent teeth, the importance of brushing, the importance of bleeding gums and how to protect against it, the meaning of dental plaque and its effects, the reasons for tooth decay and cancer, and impact of oral health on the body, each positive response was given a score '1' and each negative response was assigned as a score of '0', 2- twenty questions in a 5-point Likert-type scale (1, strongly disagree; 2, disagree; 3, neutral; 4, agree; 5, strongly agree was developed to measure participants' attitudes included questions regarding importance of regular visit to a dentist and attitudes towards oral health based on three constructs of Health Belief Model(18) (perceived severity(6 items), susceptibility (7 items) and perceived benefits (7 items)), 3- seven questions for behavior Assessing of participants' oral health behavior included brushing habits (such as frequency, duration, time, and brushing aids), reason for visiting a dentist, and adverse habits.

Data were analyzed using SPSS (version 16). Descriptive analyses were conducted using frequencies and proportions for categorical variables, and means with standard deviations (mean ± sd) for continuous variables. Independent sample t-tests was used to find the significant difference in the means of oral health knowledge, attitude and behavior between two independent groups and Karl Pearson's correlation was used to assess the relation of oral health knowledge, attitude and behavior.

Results

52.3% (230 students) were male and 47.7% (210 students) were female. Various questions were asked regarding the knowledge on oral health, such as meaning of gum bleeding, role of fluoride on teeth, healthy teeth means etc.

Results showed that approximately 93.6% of the students did not know about bleeding gums or gave wrong answers such as gingival bleeding reflects healthy gingiva or injury to the gums. Only 6.4% of the study population was aware that gingival bleeding reflects swollen gums (gingivitis). (Table 1)

When subjects were asked about the role of fluoride on teeth, 83.2% of the students were aware that fluoride strengthens the teeth, whereas 16.8% had no knowledge about the effect of fluoride on teeth**.** Majority of the students (81%) believed that healthy teeth is white and shiny teeth, while (18.2%) said that healthy teeth is strong and caries free teeth and (0.9%) had no awareness about healthy teeth.

The results of present study showed that about 75% of the respondents reported that they would only visit the dentist when they have dental pain and 15% stated that they have never visited a dentist. Of 374 (85%) reported to visit the dental clinic whereby 5% were for dental checkup, 82.9% of those were due to tooth decay and only 12% were due to bleeding gums. When questioned on the necessity of regular dental visit, approximately 50% of the students had the positive attitude that regular dental visit is necessary and 50% did not feel the necessity of regular dental visit (Table 2).

Table 3 revealed that all participants brushed their teeth regularly. Most of individuals (72.7%) brushed once a day and 15% brushed occasionally. A greater percentage of the students (93%) practiced brushing with toothbrush and toothpaste and few used finger & tooth paste (1.5%). Only 8.2% answered that they always rinse their mouth after eating while 12.9% children rinse sometimes and majority of them (78.9%) never rinse.

Results showed that in all of studied variables, girls had higher scores than boys (table 4). Table 5 showed A linear relationship between knowledge attitude and behavior, and behavior and attitude using Karl Pearson's correlation coefficient (Table 5).

Discussion

Oral health is now recognized as equally important in relation to general health. Oral health knowledge, attitudes and behavior among different groups were evaluated by survey worldwide in several studies which were performed in different countries(11, 19, 20). Even, cultural differences in countries with similar or different social systems were investigated in previous studies (21, 22).

Due to lack of studies about oral health knowledge, attitudes and behavior among khoramabad city and Lorestan province population, this study has prime importance in this field.

This study presented a comprehensive overview of the oral health behavior, knowledge and attitude among school children. The present study cannot be exactly compared with the other studies but careful observations can be made with the other studies.

Concerning knowledge, most of subjects did not know the meaning of gingival bleeding and very few reported that gingival bleeding means gingivitis, however, more than two-third of school students were aware that fluoride prevent dental caries and healthy teeth means strong and caries free strengthen teeth. The knowledge of fluoride is quite adequate, could be through the media like television, radio, newspaper and various advertisements but white and shiny teeth was introduced as healthy teeth incorrectly. But knowledge is not enough to encourage and propel individuals to act and maintain a healthy behavior(23) therefore, we evaluated participants attitude toward oral health issues.

In relation to attitude toward professional dental care, majority of the participants were found that they visit dental clinic only when they have dental pain however comparatively few no of participants (2%) has reported that dental check up should be every six months interval and 50% of the students had the positive attitude and they said that regular dental visit is necessary and similar number did not feel the necessity of regular dental visit. Pain was the main reason for visiting the dentist and agrees with other study(24). Study by Al-Omiri et al has also proved in their study that pain is the main driving factor for children to visit the dentist(13).

Lack of knowledge were found as a reason to afraid of visiting the dentist and perceive dental appointments as unpleasant and therefore curative visit are rather than preventive purposes(11). Lack of awareness among children may be a direct outcome of parental awareness and attitude(25) and another reason for this drastic behavior in developing countries might be lack of oral health education program and indicates the necessity of attention among parents of school children for regular dental visit to prevent future dental diseases.

It is very encouraging and satisfactory to know that majority of the students reported to brush their teeth at least once a day (72.7%) and unfortunately 5% of students reported who did not brush his/her teeth. This can be because of raised social knowledge about oral health and may be due to expensive dental care costs in Iran which lead to more preventive behaviors. This result can be compared with a study by Zhu et al (2005) where it was 44.4 percent(26) and with another study of Chinese school children where only 22% of the 12 yr old group brushed at twice a day, 62% brushed once a day and 16% never brushed or brushed less frequently(27).

The result of the practice questionnaire showed that major group (93%) of children used toothpaste and toothbrush to clean their teeth and low percent of participants had habit of rinsing mouth after eating. Though, a small percentage of children did indicate the use of both Toothpaste and Toothpowder. This could be due to low socioeconomic factor or lack of proper knowledge on brushing aids. This coincides with the results of another study done by Singh (2009)(28) and Prashanth et al 2011(29).

Since the study was conducted on children of considerably prudent age group who are inclined to make a positive impression about them, hence the results of the oral health practices could be biased especially the response to the frequency of brushing and mouth rinsing.

The change to healthy attitude and practice can be occurred by giving adequate information, motivation and practice of the measures to the subjects (Smyth et al, 2007)(30). Results of this study prove and is in line with other study which showed that oral hygiene habits, oral health knowledge level among schoolchildren is poor and needs to be improved (17). Parents and teachers need to be informed, motivated about dental care so that their attitudes change.

Based upon these findings, the establishment of a school-based oral health education program in school of children, including parents and teachers is recommended.

In general, females had better oral health knowledge, attitude and behavior scores than males which were in agreement with other studies (31).

This condition may be explained on the basis that females usually care more about their body and appearance. They would thus be more concerned about visiting the dentist and would tend to be more educated about their oral health. In another study from Iran, Women reported significantly higher frequencies of tooth brushing, fluoridated toothpaste use and flossing compared with men(32). Whereas in some studies males had shown significantly higher knowledge scores compared to females(33). This inconsistency in results may be explained by cultural and social differences.

As we know, there is a positive correlation between knowledge, attitude and behavior in some cases(34). So, similarly results were found in behavior scores. The correlation coefficient of 0.695 was found between knowledge and behavior, suggesting that an increase in knowledge would lead to increase in behavioral changes. The correlation coefficient higher than 0.5 was found between behavior and attitude (Perceived susceptibility, severity and benefits), again suggesting that an increase in attitude led to an increase in positive behavior. Between knowledge and attitude, a positive significant correlation was found, which again suggested that increased knowledge led to increased positive attitude. These findings are similar to the traditional health education model (KAB model) which suggests that acquiring new knowledge would alter attitudes and lead to a change in behavior(10, 35). This somewhat simplistic representation of human behavior rarely exists in the real world. In reality, a very complex relationship operates between the three domains of learning.

This study had several limitations. First, as a cross sectional study, the findings could only be used to examine associations and not to draw inferences regarding causality. Second, some constructs of the health belief model (perceived self efficacy and perceived barriers) were not used in this study. Therefore, future studies should be extended to study with full constructs. In contrast, the optimal sample size and validated and reliable tools are the strengths of this study.

The other strengths, as our knowledge, no studies have been done on knowledge, attitude and behavior of school students in Iran.

Conclusion

The following were the conclusions of the study:

1. Results of this study prove that oral hygiene habits, oral health knowledge level among school children was unsatisfactory.
2. Knowledge is associated positively with attitude (perceived severity, susceptibility and benefits) and oral health behaviors of the population was dependent on attitude and knowledge which showed a linear relationship.
3. In general, females had better oral health knowledge, attitude and behavior scores than males
4. There is a need to improve the oral health knowledge, attitude and practices in the target population with emphasis on improvement of oral hygiene

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Table 1: Knowledge on Gum Bleeding, role of Fluoride and Healthy Teeth

		Number	Percent
Gum bleeding mear	a. Swollen gums (gingivitis)	28	6.4%
	b. Healthy gums	38	8.6%
	c. Injury to gums	308	70%
	d. Don't know	66	15%
Using fluoride stren	a. Yes	366	83.1%
	b. No	74	16.9%
Healthy teeth is	a. White and shiny teeth	360	81.8%
	b. Strong and caries free teeth	80	18.2%
	c. Don't know	4	0.9%
	TOTAL	444	100%

Table 2: Attitude toward Professional Dental Care

		Number	Percent
Visit to a der	a. Every 6 months	9	2%
	b. Every 12months	13	2.9%
	c. Occasionally	22	5%
	d. Only when dental pain	330	75%
	e. Never visited	66	15%
Reason for v	a. Tooth decay	310	82.9%
	b. Bleeding gums	45	12%
	c. Dental check up	19	5%
Necessity of	a. Yes	220	50%
	b. No	202	46%
	c. Don't know	18	4%
	TOTAL	440	100%

Table 3: Knowledge on Oral Hygiene Practices

		Number	Percent
Frequency of b	a. No brushing	22	5%
	b. Occasionally	66	15%
	c. Once a day	320	72.7%
	d. Twice a day	32	7.3%
Brushing mater	a. Brush+ tooth powder	0	0%
	b. Brush + tooth paste	409	93%
	c. Finger + tooth powder	9	2%
	d. Dattiwon (Neem stick)	0	0%
	e. Not any	22	5%
Mouth rinsing a	a. Never	347	78.9%
	b. Sometimes	57	12.9%
	c. Always	36	8.2%
	TOTAL	440	100%

Table 4: Knowledge, Attitude and Oral Hygiene Practices between Genders

Group	Sex		Perceived Benefits	Knowledge	Perceived Susceptibility	Perceived Severity	Behavior
Urban	Male (n=230)	Mean ± SD	10.9 ± 4.03	10.9 ± 4.8	10.8± 5.4	8.5± 5.1	6.6± 2.2
	Female (n=210)	Mean ± SD	12.6 ± 4.07	12.8 ± 4.8	13.1 ± 4.6	10.3 ± 4.6	8.1 ± 2.4
	Total (n=440)	Mean ± SD	11.7± 4.1	11.8 ± 4.9	11.9 ± 5.2	9.4 ± 5	7.3 ± 2.4

Table 5: Descriptive Statistics and Correlations among Selected Variables (N = 440)

	knowledge	Perceived severity	Perceived susceptibility	Behavior	Perceived Benefits
Mean ± SD	11.8 ± 4.9	9.4 ± 5	11.9 ± 5.2	7.3 ± 2.4	11.7± 4.1
Knowledge	1				
Perceived Severity	.708**	1			
Perceived Susceptibility	.861**	.793**	1		
Behavior	.695**	.591**	.652**	1	
Perceived Benefits	.655**	.588**	.661**	.572**	1

**P < 0·001